

In the Claims:

1. (Currently Amended) A soldering apparatus, preferably for soldering items that have been applied a soldering agent, where the soldering apparatus includes at least one soldering zone, where the soldering zone includes means for generating vapour, the apparatus being adapted to heat the items to be soldered to a temperature required for soldering by condensing the vapour, and where the soldering zone includes gates, where the soldering zone contains a protective gas, wherein the soldering zone includes means for shutting off the vapour generating means, wherein the soldering zone is adapted for supplying means for forced condensing of the condensing vapour in the soldering zone at the end of a soldering process.

2. (Previously Presented) A soldering apparatus according to claim 1, wherein the apparatus is arranged to supply protective gas through ducts to the soldering zone at the start of a soldering process, the supplying of protective gas being effected in dependence of a measurement of the actual oxygen content in the soldering zone.

3. (Previously Presented) A soldering apparatus according to claim 1, wherein the apparatus is provided with suction facilities for removing condensing vapour and protective gas corresponding to the supplied amount of protective gas from the soldering zone, wherein the apparatus is adapted for supplying protective gas at a regulated temperature lower than the soldering temperature in the soldering zone for achieving forced condensing of the condensing vapour, wherein the apparatus is adapted to supply protective gas to the soldering zone at a first high temperature at the end of a soldering process, where the temperature is approached a second lower temperature over a period of time.

4. (Previously Presented) A soldering apparatus according to claim 3, wherein the apparatus is adapted for forced condensation by use of recirculation through condensing means and through means for flux filtration.

5. (Previously Presented) A soldering apparatus according to claim 4, wherein the soldering zone includes a vessel to be heated by at least one heating element, wherein the vessel is covered by the means for shutting off, including at least one fixed perforated plate that may interact with at least one displaceable perforated plate which may be displaced by at least one actuator.

6. (Previously Presented) A soldering apparatus according to claim 5, wherein the apparatus is adapted to have the means for shutting off the vessel closed until the start of a soldering process, wherein at least one heating element may be activated at the start of the soldering process simultaneously with opening the means for shutting off the vessel, where the apparatus is adapted for closing the means for shutting off the vessel simultaneously with regulating the means for heating by ending a soldering process.

7. (Previously Presented) A soldering apparatus according to claim 6, wherein the apparatus includes a preheating zone for preheating items to be soldered to a predetermined temperature, wherein the soldering apparatus includes at least one gate between the preheating zone and the soldering zone, wherein the preheating zone includes at least one gate at its entrance where the preheating zone is supplied with protective gas, wherein suction facilities from the preheating zone reduces the oxygen content in the preheating zone.

8. (Previously Presented) A soldering apparatus according to claim 7, wherein the apparatus includes at least one cooling zone, wherein the apparatus includes at least one gate between the soldering zone (6) and the cooling zone, and that the cooling zone includes at least one gate at the exit.

9. (Previously Presented) A soldering apparatus according to claim 8, wherein the soldering apparatus includes means for determining the position of the items to be soldered, wherein the opening and closing functions of the gates of the apparatus can be determined from the position of the items and the actual conditions in the zones of the apparatus.

10. (Currently Amended) An apparatus A soldering apparatus according to claim 1, wherein the apparatus further comprises means for condensation of a vapour containing flux, wherein pumping means circulate the vapour containing flux through the condensation means, wherein the condensation means comprise a heat exchanger for cooling the vapour for flux and vapour condensation, wherein said pumping means are stopped during the soldering process, and started upon ending a solder process, wherein the pumping means operate in a closed circuit starting at an outlet from the soldering process and ending at an inlet to the soldering process, wherein the closed circuit comprises at least a first heat exchanger operating at a first temperature, and at least a second heat exchanger operated at a second lower temperature, wherein the heat exchangers are placed in conjunction with liquid collecting means.

11. (Previously Presented) An apparatus according to claim 10, wherein the closed circuit also comprises at least one heat exchanger for heating protective gas to a temperature below the condensing temperature of the vapour before the protective gas is returned to the soldering device in a time period after soldering is finished.

12. (Previously Presented) An apparatus according to claim 11, wherein liquefied solder heating medium is returned from the liquid collecting means through a conduit to a flux trap comprising steps, which flux trap is cooled by cooling means, first to a temperature for condensation and subsequently further cooled to a temperature for flux liquefying.

13. (Previously Presented) An apparatus according to claim 12, wherein the heat exchangers comprise cooling fins that are tilted against the inlet direction in order to return liquefied solder heating medium and liquefied or solidified flux, wherein protective gas passes over and around the fins.

14. (Previously Presented) An apparatus according to claim 13, wherein liquefied solder heating medium and liquefied or solidified flux passes filter means before reaching

collecting means, which filter means collect liquid or solidified flux and other unwanted chemical substances.

15. (Previously Presented) An apparatus according to claim 14, wherein liquid solder heating medium is collected at the surface of a tray placed under the soldering zone and led over the flux trap.

16. (Previously Presented) An apparatus according to claim 15, wherein surfaces on elements in contact with flux are coated with a material having ability not to fix liquid or solidified flux.

17. (Previously Presented) An apparatus according to claim 16, wherein the pressure in the soldering zone is reduced at the beginning of a soldering process, wherein the pressure is partly normalised by opening a valve for supply of protective gas into the soldering zone, wherein the pressure in the soldering zone is normalized by opening for supply of vapour.

18. (Previously Presented) A method for soldering in which items to be soldered are applied a soldering agent in advance, wherein the items are preheated in a first step, wherein the items are soldered in a second step in that condensing vapour heats the items to a temperature, which is higher than the melting point of the soldering agent, wherein the soldering items are cooled in a third step subsequent to soldering, wherein the second step is effected in the presence of a protective gas, wherein the second step includes shutting off the supply of vapour and forced condensing of vapour.

19. (Previously Presented) A method according to claim 18, wherein the supplying of protective gas is used as means for forced condensing of vapour.

20. (Previously Presented) A method according to claim 19, wherein the method comprises flux deposition in conjunction with vapour phase soldering, which soldering

process leads to evaporation of flux and other chemical substances, wherein the vapour of solder heating medium containing flux and other chemical substances is drawn into a closed circuit in time periods between or after soldering processes, wherein the closed circuit comprises at least a first condensation process and a second condensation process, which first and second condensation processes take place at a first high temperature and at a second lower temperature, and wherein liquid solder heating medium is returned to the vapour phase soldering process.

21. (Previously Presented) A method according to claim 20, wherein the first temperature depends on the condensation temperature of the flux, wherein the second temperature depends on the condensation temperature of the solder heating medium.

22. (Previously Presented) A method according to claim 21, wherein the protective gas is heated by heating means to a temperature below the condensation temperature of the vapour after it has passed through the condensing processes and before the protective gas is returned to the soldering chamber, which condensing processes and the heating process take place in time periods after soldering of the elements.

23. (Previously Presented) A method according to claim 22, wherein the condensed heating medium is returned to the process, wherein it is led through a flux depositing trap, which trap comprises a cooling process for flux condensation and flux solidification.